NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 103)

Question 1

Let f represent a function. If $f[7] = 44$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{2} - 13\right] - 24}{5}$$

Find the solution.

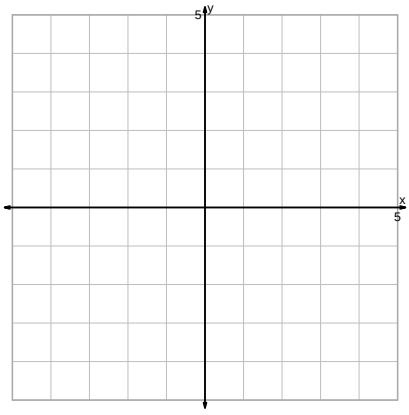
$x =$

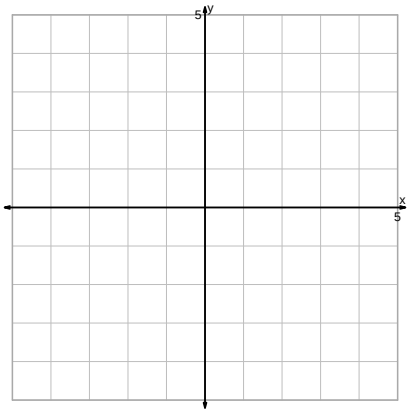
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

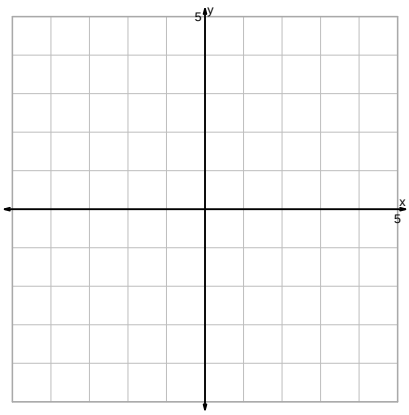
$y = \sqrt[3]{2x}$

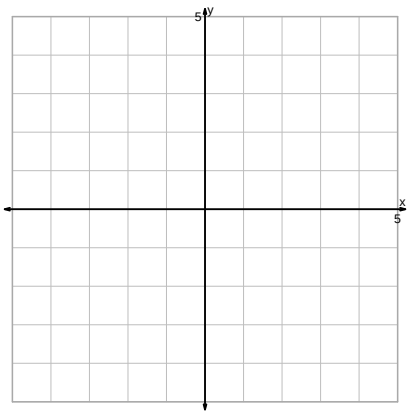




$y = 2^{-x}$

$y = 2 \cdot x^3$

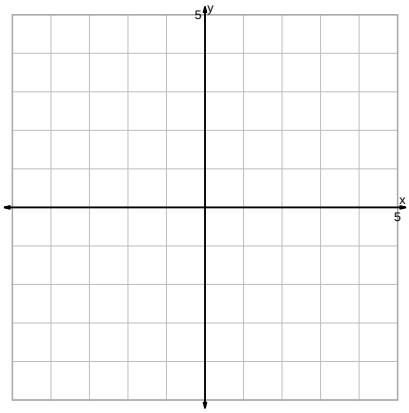


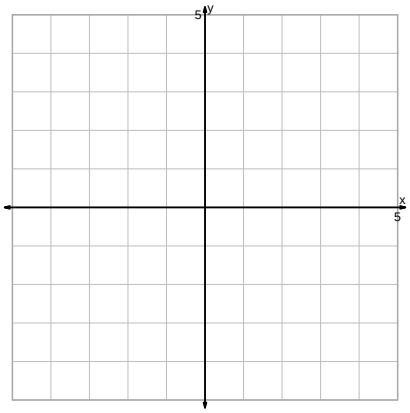


$y = \log_2\left(\frac{x}{2}\right)$

Question 2 continued...

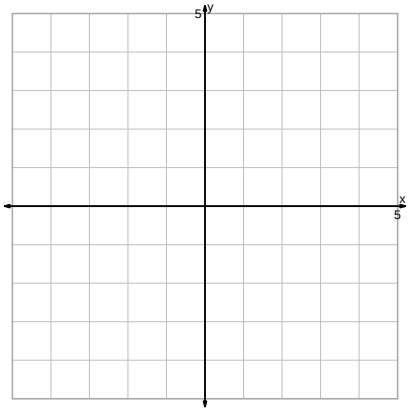
$y = -\sqrt{x}$

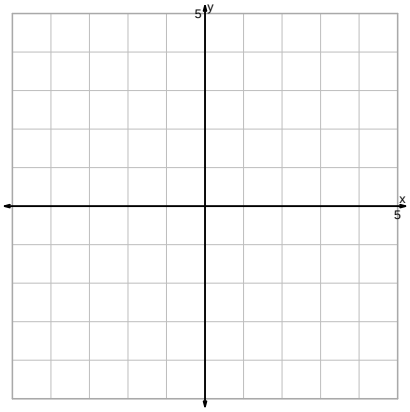




$y = \frac{x^3}{2}$

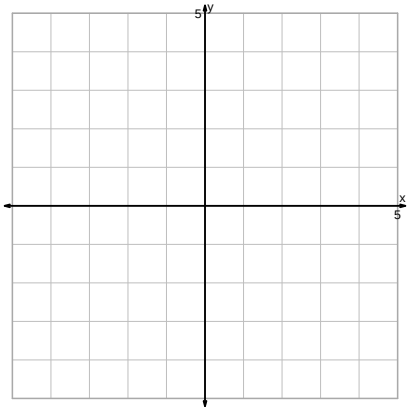
$y = \sqrt{x} + 2$

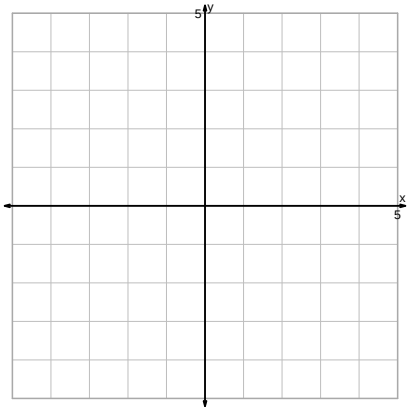




$y = \sqrt[3]{x+2}$

$y = (x-2)^2$

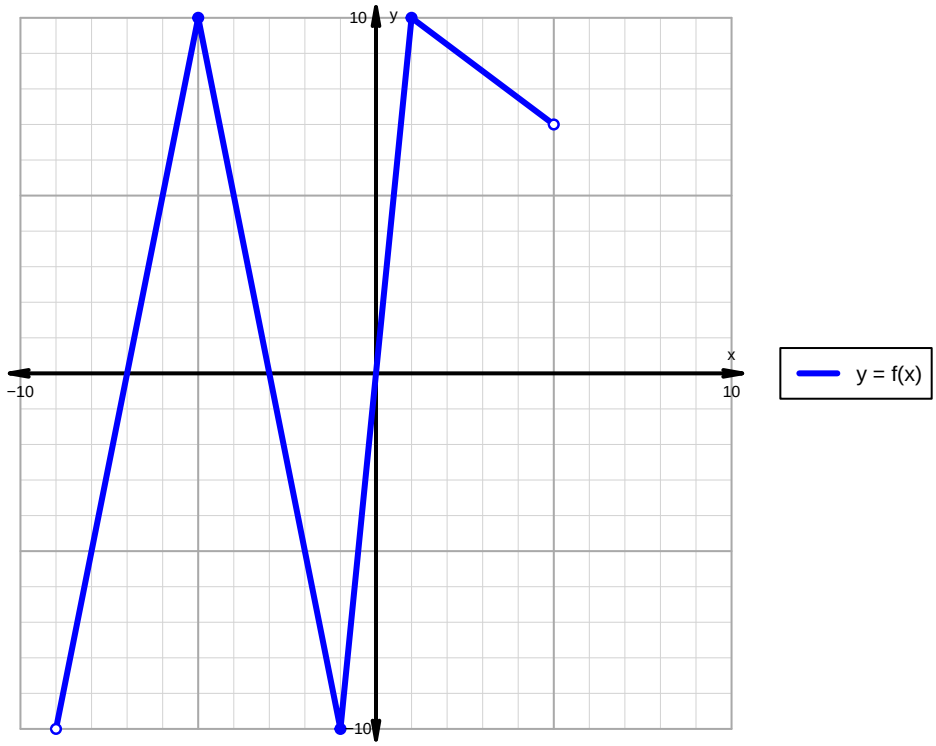




$y = 2^x - 2$

Question 3

A function is graphed below.



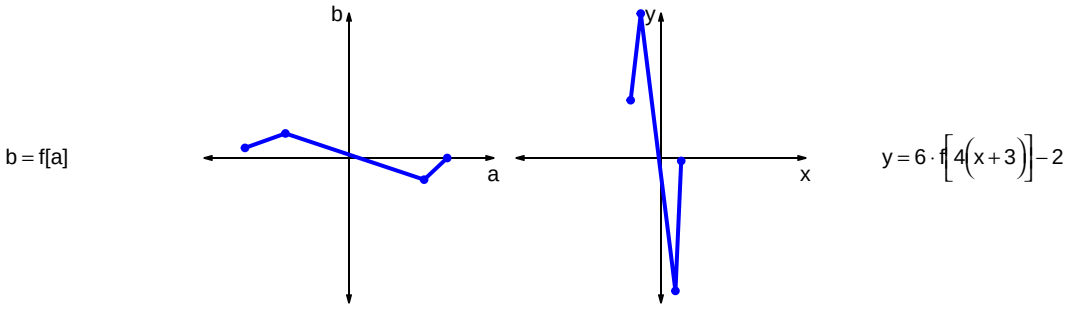
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 6 \cdot f[4\,(x+3)] - 2$ are represented below in a table and on graphs.

a	b	x	y
-72	7	-21	40
-44	17	-14	100
52	-15	10	-92
68	0	14	-2



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 6 \cdot f[4\,(x+3)] - 2$?

Question 5

A parent square-root function is transformed in the following ways:

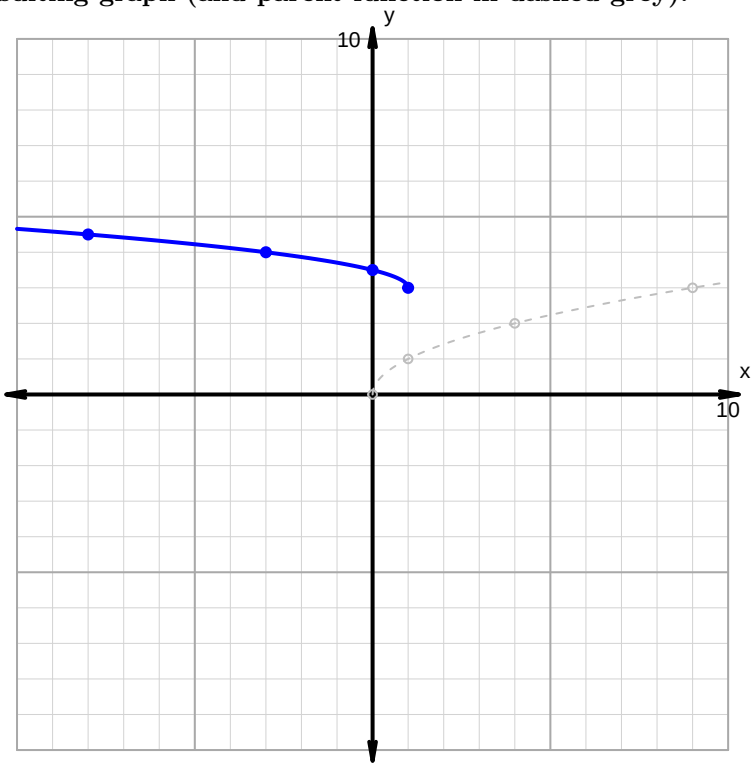
Horizontal transformations

1. Translate left by distance 1.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical shrink by factor 2.
2. Translate up by distance 3.

Resulting graph (and parent function in dashed grey):

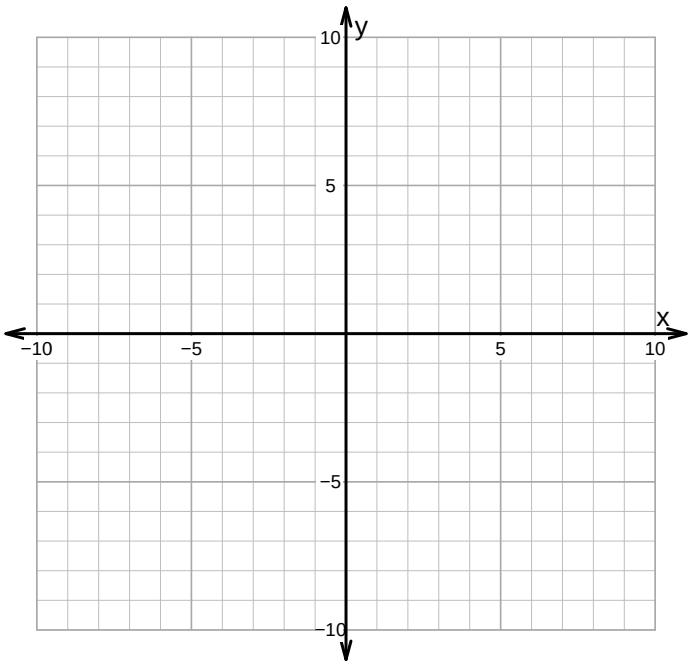


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{3} \cdot |x - 3| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
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Decreasing	